

HAIR CLIP WITH INTERLOCKING COMBS

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TECHNICAL FIELD:

This invention relates to hair clips or fasteners comprising two combs and
10 at least one elastic member resiliently to bias the teeth of the combs into
an interleaved arrangement with one another. The invention is concerned
primarily, though not exclusively, with hair clips having combs that are
movable independently of each other.

15 **BACKGROUND ART:**

Known hair clips with two combs, of all types, rely on the resilient bias
of the elastic member and the configuration of the clips (or clips and
elastic member) to hold the clip in engagement with the user's hair. Thus
such clips do not reliably engage sparse, short or small clumps of hair as
20 there is limited, if any, engagement of the teeth with individual hairs or
clumps of hair.

This invention seeks to provide a hair clip for reliably engaging all
types, lengths and quantities of hair.

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DISCLOSURE OF THE INVENTION:

One aspect of the invention provides a hair clip comprising two combs and
at least one elastic member resiliently to bias the teeth of the combs into
an interleaved arrangement with one another, wherein at least selected
30 teeth are wider than the spaces between teeth with which such selected
teeth are to be interleaved in use and the teeth of each comb are shaped to
fit at least partially into the spaces between the teeth of the other comb.

This construction causes interleaved teeth to overlap one another and clamp
35 hair between one another.

The teeth of each comb may be similar to one another, in which event
preferably all of the teeth are wider than the spaces between the teeth.

Preferably the width of the teeth is about 0.5 to 2 mm wider than the width of the spaces. This causes an overlap in the range of 0.5 to 2 mm.

5 The combs may be of a resiliently flexible material, such as an appropriate plastics.

Another aspect of the invention provides a method of clipping hair using a hair clip comprising two combs and at least one elastic member to bias the teeth of the combs towards one another, the combs being movable
10 independently of each other and selected teeth being wider than the spaces between teeth with which such selected teeth are to be interleaved in use, including the steps of:

- inserting one of the combs into the hair in a first direction;
- stretching the elastic member;
- 15 -- inserting the other comb into the hair in a second direction substantially opposed to the first direction; and
- twisting or bending at least some of the teeth while inserting the combs into engagement with each other to cause some of the teeth of one comb to overlay and others to underlay the teeth of the other comb and
20 thereby resiliently clamp hair between the two combs.

The combs may be rotated relatively to each other or some of the teeth of one or each comb may be bent away from the general plane of the other teeth of that comb.

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Further features, variants and/or advantages of the invention will emerge from the following non-limiting description of examples of the invention made with reference to the accompanying schematic drawings and from the claims, which are to be regarded as an integral part of this description.

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BRIEF DESCRIPTION OF THE DRAWINGS:

- Figure 1 shows a plan view of a comb for a hair clip of the invention;
- Figure 2 shows an end view of the comb of Figure 1;
- Figure 3 shows a side view of the comb of Figure 1;
- 35 Figure 4 shows a plan view of a hair clip of the invention including to combs as shown in Figure 1;
- Figure 5 shows an underplan view of the hair clip of Figure 4, the combs being arranged ready for use;

- Figure 6 shows a side view of the clip of Figure 5;
- Figure 7 shows the combs of the clip of Figure 5 engaged with each other in a first configuration;
- Figure 8 shows a sectioned view along VIII - VIII of the combs of Figure 7;
- Figure 9 shows the combs of the clip of Figure 5 engaged with each other in a second configuration;
- Figure 10 shows a sectioned view along IX - IX an end view of the combs of Figure 9; and
- Figure 11 shows, on an enlarged scale, a cross-section of teeth of interleaved combs of the invention illustrating how hair is clamped in use.

DESCRIPTION OF ILLUSTRATED EMBODIMENTS:

- In the drawings the same or similar parts have the same reference numbers, certain parts having sub-numbers to identify them as part of a component or as substantially equivalent parts in different embodiments.

Figures 1 to 3 of the drawings show a hair clip 10 comprising two combs 12 and three elastic members 14 connecting the combs to each other. Each comb 12 has a back 12.1 formed with three through holes 16.1, each recessed in a slot 16.2, for attaching one end of an elastic member 14 and a plurality of similar teeth 12.2 that are separated from one another by spaces 18. The comb is curved in three dimensions, i.e. in plan, side and end views, so that it can follow the curvature of the head of a user. Each comb is injection moulded of a resiliently flexible Nylon. As best seen in Figure 11, each tooth is elliptical in cross-section and has a width that is slightly greater than the spaces 18 between the teeth.

- Two of the elastic members 14.1 comprises a loop of elasticised strip material within a material sleeve 15 that has a length much greater than the loop when unstretched so that it bunches around the loop. The central elastic member 14.2 comprises a plurality of beads 17 threaded onto on elasticised loop.

In the illustrated embodiment the teeth have a width of about 4 mm and the spaces are each about 3.5 mm wide. The teeth may be much thinner, such as 2 mm wide, with correspondingly narrower spaces. In any event, the width of the teeth is slightly greater than that of the spaces by 0.5 to 2 mm.

Figure 4 shows the clip 10 in its relaxed position with the teeth of the two combs facing away from one another. Figures 5 and 6 show the clip with the teeth facing each other ready for use.

5 In use, one of the clips is inserted into the user's hair, the elastic members 14 are stretched and the other comb is inserted into the hair in a direction towards the first comb. The combs are then pushed together, with hair to be fastened contained within the space between the combs and the elastic members. The combs are drawn together by the elasticity of the
10 elastic members. The combs are also locked into the hair to some extent in the conventional manner by the teeth interengaging the hair into which it is pushed.

In accordance with the invention, the comb inserted second is twisted, ie.
15 rotated, by about 15° prior to insertion into engagement with the comb that has already been inserted into the hair. This results in the configurations shown in Figures 7 and 8 in which one part of each comb overlays a part of the other comb. Consequently strands of hair are clamped between the two combs, because the teeth are wider than the spaces and engage one another
20 as shown in Figure 11. This clamping action ensures clamping of sparse, thin, short and small clumps or strands of hair.

Figures 9 and 10 show an alternative use of the clip 10, in which one of the combs is flattened in a direction normal to the back 12.1 when the
25 combs are pushed into engagement with each other. Thus, when engaged, the teeth of two spaced portions of one comb overlay the other comb. This creates a tighter clamping action than the arrangement of Figures 7 and 8, because the elasticity of the material of the combs themselves is also applied to urge the teeth of one comb towards those of the other comb.
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The elastic members are not shown in Figures 7 to 10 for clarity of illustration. For the same reason hatching is applied to one of the combs to assist in distinguishing the teeth of the respective combs.

35 The invention is not limited to the precise details described above and shown in the drawings. Modifications may be made and other embodiments developed without departing from the scope of the invention as defined in the claims. For example, any suitable resiliently flexible plastics, such as polypropylene, polyethylene, ABS plastics may also be used. The comb
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may be of any desired size, length and width as desired. The elastic members can be used in any desired combination, such as all material covered or all beaded, none covered, different combinations and arrangements of beads, and so on.

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CLAIMS:

1. A hair clip comprising two combs (12) and at least one elastic member (14) resiliently to bias the teeth (12.2) of the combs into an interleaved arrangement with one another, wherein at least selected teeth (12.2) are wider than the spaces (18) between teeth with which such selected teeth are to be interleaved in use and the teeth (12.2) of each comb are shaped to fit partially into the spaces between the teeth (12.2) of the other comb.
2. The hair clip of claim 1, wherein at least the selected teeth (12.2) are substantially elliptical in cross-section.
3. The hair clip of either of claims 1 or 2, wherein all of the teeth (12.2) are wider than the spaces between the teeth.
4. The hair clip of any one of claims 1 to 3, wherein the teeth (12.2) are all of substantially the same width.
5. The hair clip of any one of claims 1 to 4, wherein the width of the teeth is about 0.5 to 2 mm wider than the width of the spaces.
6. The hair clip of any one of claims 1 to 5, wherein the combs are of a resiliently flexible material, such as an appropriate plastics.
7. The hair clip of any one of claims 1 to 6, wherein at least one of the elastic members (14.1) comprises a length of elastic material covered by a sheath of fabric material.
8. The hair clip of any one of claims 1 to 6, wherein at least one of the elastic members (14.2) comprises a length of elastic material and a plurality of beads threaded onto the length of elastic material.
9. A method of fastening hair using a hair clip (10) comprising two combs (12) and at least one elastic member (14) to bias the teeth (12.2) of the combs towards each other, the combs (12) being movable independently of each other and selected teeth (12.2) being wider than the spaces (18) between teeth with which such selected teeth are to be interleaved in use,

including the steps of:

- inserting one of the combs (12) into the hair in a first direction;
- stretching the elastic member (14);
- inserting the other comb (12) into the hair in a second direction
- 5 substantially opposed to the first direction; and
- twisting the combs (12) relatively to each other while inserting them into engagement, such that some of the teeth of one comb overlay and others underlay the teeth of the other comb so as to clamp hair between the two combs.

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10. The method of claim 9, wherein the twisting is performed by rotating one comb relatively to the other (Figure 8).

11. The method of claim 9, wherein the twisting is performed by

15 distorting at least one comb about an axis substantially parallel to the length of the teeth of the comb (Figure 10).

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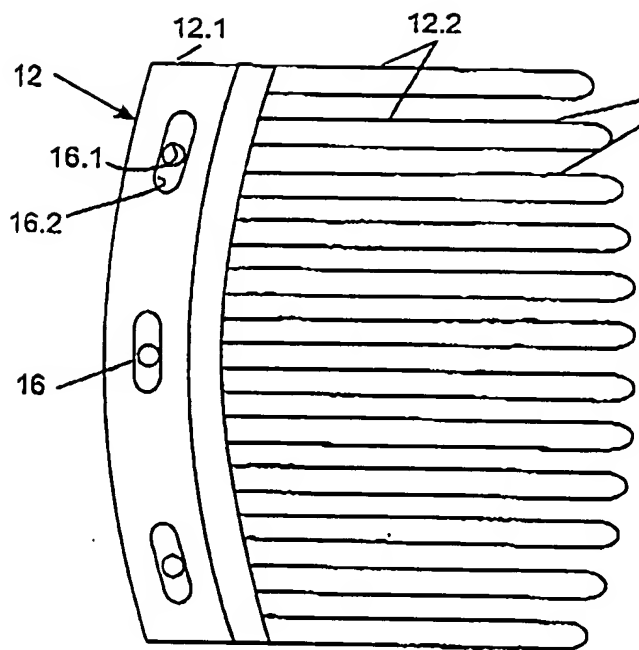


Figure 1

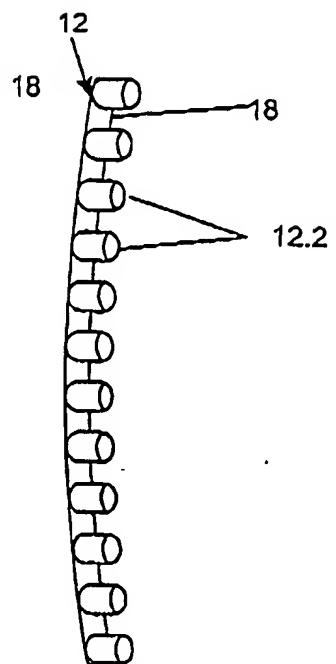


Figure 2

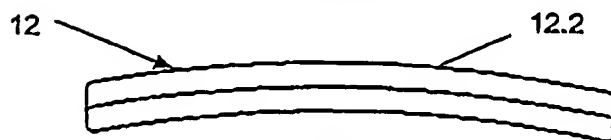


Figure 3

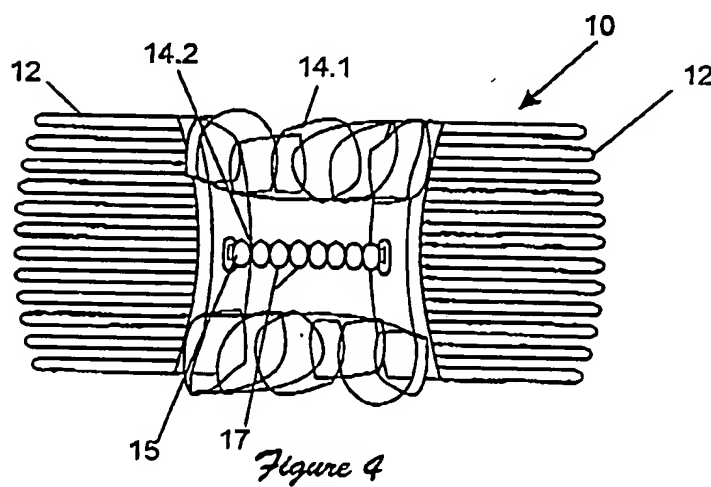


Figure 4

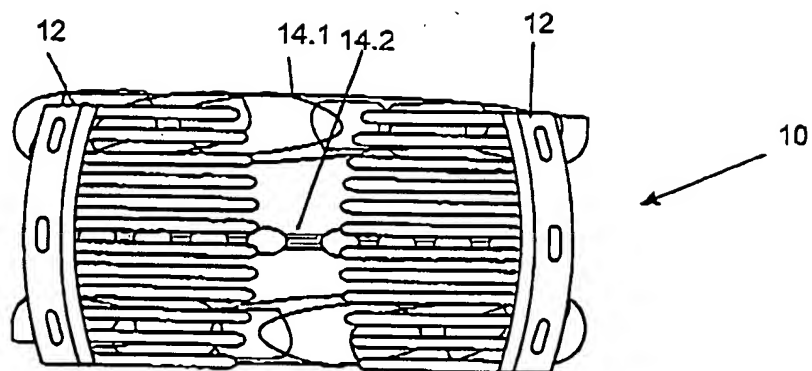


Figure 5

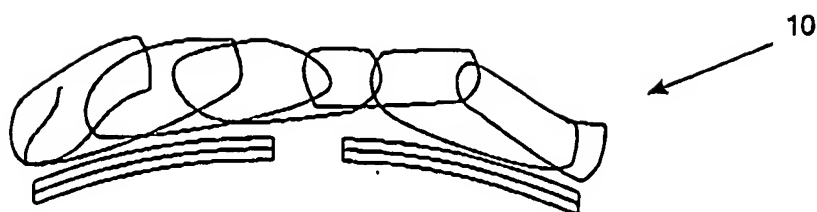


Figure 6

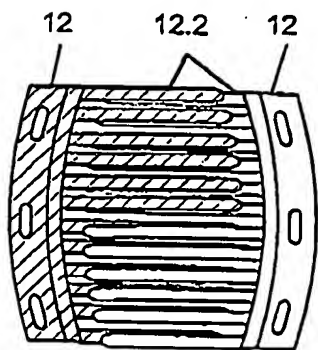


Figure 7

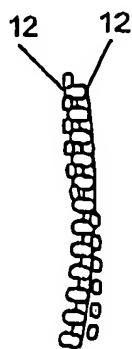


Figure 8

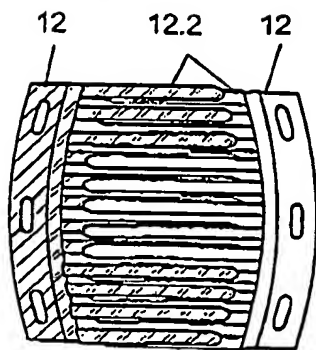


Figure 9

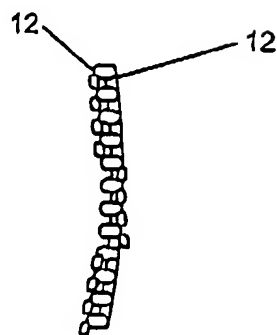


Figure 10

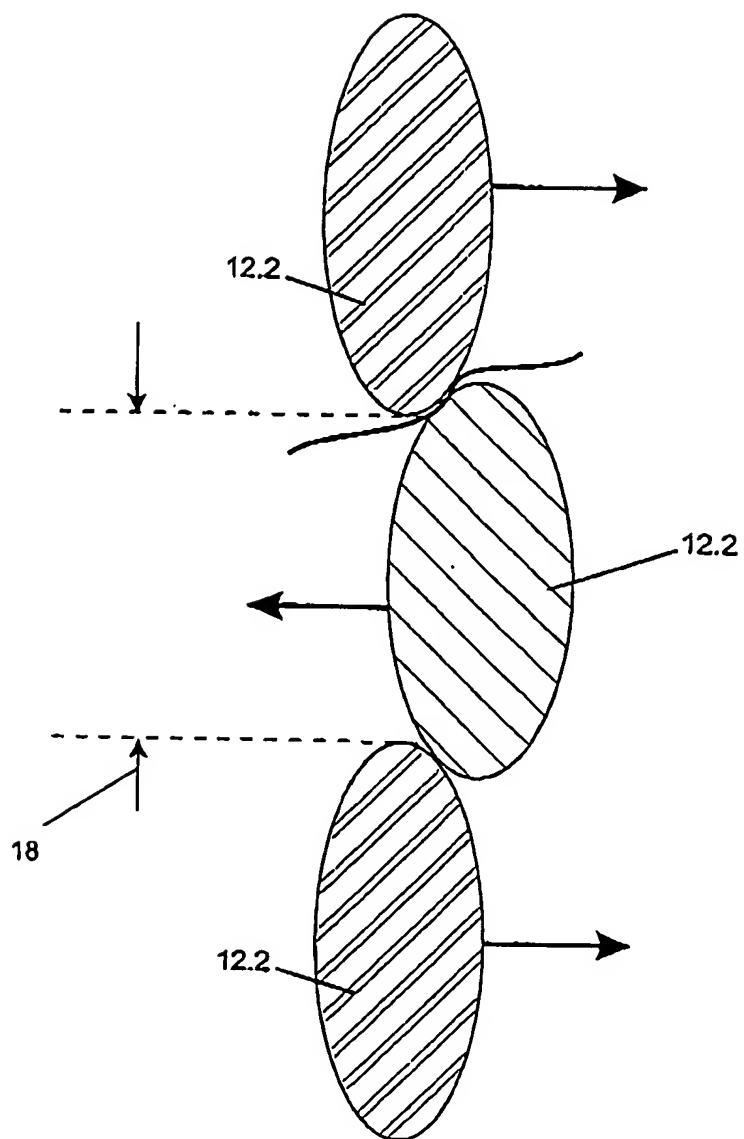


Figure 11

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WO. P. 2366	FOR FURTHER ACTION <small>see Form PCT/ISA/220 as well as, where applicable, item 5 below.</small>	
International application No. PCT/ZA2004/000068	International filing date (day/month/year) 21/07/2004	(Earliest) Priority Date (day/month/year) 20/06/2003
Applicant GLADWIN, Thea		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the International search was carried out on the basis of the International application in the language in which it was filed, unless otherwise indicated under this item.

☐ The International search was carried out on the basis of a translation of the International application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the International application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box II).

3. ☐ Unity of invention is lacking (see Box III).

4. With regard to the title.

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract.

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this International search report, submit comments to this Authority.

6. With regards to the drawings,

a. the figure of the drawings to be published with the abstract is Figure No. 7

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/ZA2004/000068

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A45D8/12 A45D8/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A45D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 6 123 086 A (KUGLEN FRANCESCA B) 26 September 2000 (2000-09-26) column 2, line 17 - line 49 column 7, line 3 - line 29; claims; figures	1-8 9-11
X A	US 5 690 128 A (GRIMES KRISTINA M) 25 November 1997 (1997-11-25) column 2, line 9 - line 22 column 3, line 30 - column 4, line 47; claims; figures	1-8 9-11
A	US 6 047 705 A (HAWLEY ANTHONY ARTHUR) 11 April 2000 (2000-04-11) column 1, line 28 - line 40; figures 3-5	1-11
A	US 6 427 702 B1 (SILVA DAVID ALAN) 6 August 2002 (2002-08-06) abstract; figures	1-11

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

15 October 2004

Date of mailing of the international search report

26/10/2004

Name and mailing address of the ISA

European Patent Office, P.O. Box 5818 Patentlaan 2
NL - 2200 HV Rijswijk
Tel: (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Acerbis, G

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/ZA2004/000068

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6123086	A	26-09-2000	NONE	
US 5690128	A	25-11-1997	NONE	
US 6047705	A	11-04-2000	GB 2316001 A AT 219898 T AU 3946697 A DE 69713782 D1 EP 0929242 A1 WO 9806295 A1	18-02-1998 15-07-2002 06-03-1998 08-08-2002 21-07-1999 19-02-1998
US 6427702	B1	06-08-2002	NONE	